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09/944,767	08/31/2001	Christopher J. Milone	MILONE I	2744

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EXAMINER	
JACKSON, ANDRE K	

ART UNIT	PAPER NUMBER
2856	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/944,767	MILONE, CHRISTOPHER J.	
	Examiner	Art Unit	
	André K. Jackson	2856	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 December 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21 and 30-43* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21 and 34-43* is/are rejected.

7)☒ Claim(s) *30-33* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

On page 4, line 20 "figure(s)" is spelled with a lower case (f), but on pages 8 and 9 "figure" is spelled with an upper case (f). Consistency is needed.

On page 5, lines 26-29 beginning with "When" the sentence is written awkwardly. "When there is no water bridging the contacts 5 between the source voltage lead 8 and its associated base resistor 8a, ***the transistor is cut off and acts like and open switch from the*** collector to the emitter. When water bridges the contacts between the source voltage and the base resistor a ...". There seems to be a word omitted or added.

On page 7, lines 7-9 should (7) represent, a "hydrostatic circuit" or a "hydrostatic resistance network". Consistency is needed.

On page 9, line 3 the parenthesis is not closed --)--.

On page 9, line 33 there are two periods.

Appropriate correction is required.

Claim Objections

2. Claims 16-19 are objected to because of the following informalities:

Regarding claims 16-19, lines 1-2 of the claim it seems as if "is" should be deleted.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 34-43 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. There is nothing in the specification that suggests or discloses two elongated sensors. Page 4, lines 3,10,31; page 5, lines 17; page 6, line 15 and figures 1-5 all show or describe one elongated sensor.

Claim Rejections - 35 USC § 103

5. Claims 1-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Owens in view of Solinst and in further view of Ehrenfried et al. (4967594).

Regarding claim 1, Owens discloses in the patent entitled "Liquid tank gauge" which has an elongated sensor extending down the length of the well (Figure 1); a conductive liquid sensing circuit having a network for

sensing electrically conductive liquids (Figures 1-3); a hydrostatic sensing circuit that responds to the actuation of conductive and non-conductive liquids (Figures 1-3) and an electrically conductive liquid measuring means coupled to the network for producing a signal proportional to the thickness of a layer of conductive liquid in the well (Abstract, Columns 1-2). Owens does not disclose an electrically conductive and a non-conductive liquid measuring means coupled to the resistive network for producing an all liquids signal proportional to the thickness of all liquids in the well including both conductive and non-conductive liquids. However, Solinst discloses an "Interface Meter" which has an electrically conductive and a non-conductive liquid measuring means for producing an all liquids signal proportional to the thickness of all liquids in the well including both conductive and non-conductive liquids (Page 2). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Owens to include an electrically conductive and a non-conductive liquid measuring means for producing an all liquids signal proportional to the thickness of all liquids in the well including both conductive and non-conductive liquids as taught by Solinst. By adding this provision it would make it possible for the user to conduct measurements in a well for both conductive and non-conductive liquids. Owens does not explicitly disclose a resistive network. However, Ehrenfried et al. disclose in the patent entitled "Sheathing and venting of resistance-tape level sensor" where the network is a resistive network

(Abstract, Column 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Owens to include a resistive network. By adding this feature the user would be able to precisely and quickly measure the wells contents. Ehrenfried et al. disclose one resistive network for both measurements and Owens discloses a plurality of measurement devices; therefore it would have been obvious to provide each device with a resistive circuit.

Regarding claim 2, Owens discloses including DNAPL measuring means coupled to a portion of a network at a well bottom portion for detecting the possible presence of a DNAPL layer adjacent the well bottom portion (Column 1). Owens does not explicitly disclose a resistive network. However, Ehrenfried et al. disclose where the network is a resistive network (Abstract, Column 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Owens to include a resistive network. By adding this feature the user would be able to precisely and quickly measure the wells contents.

Regarding claim 3, Owens does not disclose where the DNAPL measuring means for measuring the resistance of the resistive network which is proportional to the thickness of the DNAPL layer adjacent the well bottom portion. However, Solinst discloses where the DNAPL measuring means for measuring the thickness of the DNAPL layer adjacent the well bottom portion (Page 2). Therefore, it would have been obvious to one of

ordinary skill in the art at the time the invention was made to modify Owens to include an electrically conductive and a non-conductive liquid measuring means for producing an all liquids signal proportional to the thickness of all liquids in the well including both conductive and non-conductive liquids as taught by Solinst. By adding this provision it would make it possible for the user to conduct measurements in a well for both conductive and non-conductive liquids. Owens does not explicitly disclose a resistive network. However, Ehrenfried et al. disclose where the network is a resistive network (Abstract, Column 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Owens to include a resistive network. By adding this feature the user would be able to precisely and quickly measure the wells contents.

Regarding claim 4, Owens discloses a LNAPL measuring means coupled to an upper portion of the resistive network at a well top portion for detecting the possible presence of a LNAPL layer adjacent the top portion (Abstract, Columns 1-2, Figures 2, 3).

Regarding claim 5, Owens discloses a LNAPL measuring means (Abstract, Columns 1-2, Figures 2, 3). Owens does not disclose where the LNAPL measuring means includes a means for comparing the resistance of the first network with the second network. However, Solinst discloses a means for comparing (Pages 2 and 3). Therefore, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to modify Owens to include a means for comparing. By adding this provision it would make it possible for the user to determine the thickness of the layers. Ehrenfried et al. disclose resistors and to compare the resistors would be clearly within the purview of the skilled artisan since Solinst shows it is known to compare the values in the article presented. By adding resistor measurements this would make the measurements more accurate.

Regarding claim 6, Owens discloses a LNAPL measuring means coupled to the upper portion of the resistive network at a well top portion for detecting the possible presence of a LNAPL layer adjacent the well top portion (Abstract, Columns 1-2, Figures 2, 3).

Regarding claim 7, Owens discloses a LNAPL measuring means (Abstract, Columns 1-2, Figures 2, 3) respectively. Owens does not disclose where the LNAPL measuring means includes a means for comparing the resistance of the first network with the second network. However, Solinst discloses a means for comparing (Pages 2 and 3). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Owens to include a means for comparing. By adding this provision it would make it possible for the user to determine the thickness of the layers. Ehrenfried et al. has resistors and to compare those resistors would be clearly within the purview of the skilled artisan since Solinst shows it is known to compare the values in the

article presented. By adding resistor measurements this would make the measurements more accurate.

Regarding claim 8, Owens does not disclose where the elongated sensor includes a well depth sensing circuit, including a third resistive network of connected resistors and well depth measuring means coupled to the third resistive circuit for producing a signal proportional to well depth. However, Solinst discloses where the elongated sensor includes a well depth sensing circuit, and well depth measuring means for producing a signal proportional to well depth (Pages 2 and 3). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Owens to include where the elongated sensor includes a well depth sensing circuit, and well depth measuring means for producing a signal proportional to well depth. By adding this parameter the user would be able to ascertain the depth of the particular fluid in the well. A third resistive network is not disclosed. However, to use a resistive network for this measurement is clearly within the purview of the skilled artisan since a resistive network is used with hydrostatic sensing and conductive sensing and it would make the measurements more accurate.

Regarding claim 9, Owens does not disclose where the elongated sensor includes a well depth sensing circuit, including a third resistive network of connected resistors and well depth measuring means coupled to the third resistive circuit for producing a signal proportional to well

depth. However, Solinst discloses where the elongated sensor includes a well depth sensing circuit, and well depth measuring means for producing a signal proportional to well depth (Pages 2 and 3). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Owens to include where the elongated sensor includes a well depth sensing circuit, and well depth measuring means for producing a signal proportional to well depth. By adding this parameter the user would be able to ascertain the depth of the particular fluid in the well. A third resistive network is not disclosed. However, to use a resistive network for this measurement is clearly within the purview of the skilled artisan since a resistive network is used with hydrostatic sensing and conductive sensing and it would make the measurements more accurate.

Regarding claim 10, Owens does not disclose where the elongated sensor includes a well depth sensing circuit, including a third resistive network of connected resistors and well depth measuring means coupled to the third resistive circuit for producing a signal proportional to well depth. However, Solinst discloses where the elongated sensor includes a well depth sensing circuit, and well depth measuring means for producing a signal proportional to well depth (Pages 2 and 3). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Owens to include where the elongated sensor includes a well depth sensing circuit, and well depth measuring

means for producing a signal proportional to well depth. By adding this parameter the user would be able to ascertain the depth of the particular fluid in the well. A third resistive network is not disclosed. However, to use a resistive network for this measurement is clearly within the purview of the skilled artisan since a resistive network is used with hydrostatic sensing and conductive sensing and it would make the measurements more accurate.

Regarding claim 11, Owens does not disclose where the elongated sensor includes a well depth sensing circuit, including a third resistive network of connected resistors and well depth measuring means coupled to the third resistive circuit for producing a signal proportional to well depth. However, Solinst discloses where the elongated sensor includes a well depth sensing circuit, and well depth measuring means for producing a signal proportional to well depth (Pages 2 and 3). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Owens to include where the elongated sensor includes a well depth sensing circuit, and well depth measuring means for producing a signal proportional to well depth. By adding this parameter the user would be able to ascertain the depth of the particular fluid in the well. A third resistive network is not disclosed. However, to use a resistive network for this measurement is clearly within the purview of the skilled artisan since a resistive network is used with hydrostatic

sensing and conductive sensing and it would make the measurements more accurate.

Regarding claim 12, Owens does not disclose where the elongated sensor has a tape coupled to tape support means extending along the length of the well for retaining the tape in place within the well between well inspections thereby eliminating lowering sensors into the well that may require subsequent decontamination procedures. However, Ehrenfried et al. disclose where the elongated sensor has a tape coupled to tape support means extending along the length of the well for retaining the tape in place within the well between well inspections thereby eliminating lowering sensors into the well that may require subsequent decontamination procedures (13). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Owens to include where the elongated sensor has a tape coupled to tape support means extending along the length of the well for retaining the tape in place within the well between well inspections thereby eliminating lowering sensors into the well that may require subsequent decontamination procedures. By adding this feature the user would be able to measure the specific changes within tank or container accurately.

Regarding claim 13, Owens does not disclose where the elongated sensor has a tape coupled to tape support means extending along the length of the well for retaining the tape in place within the well between well inspections thereby eliminating lowering sensors into the well that

may require subsequent decontamination procedures. However, Ehrenfried et al. disclose where the elongated sensor has a tape coupled to tape support means extending along the length of the well for retaining the tape in place within the well between well inspections thereby eliminating lowering sensors into the well that may require subsequent decontamination procedures (13). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Owens to include where the elongated sensor has a tape coupled to tape support means extending along the length of the well for retaining the tape in place within the well between well inspections thereby eliminating lowering sensors into the well that may require subsequent decontamination procedures. By adding this feature the user would be able to measure the specific changes within tank or container accurately.

Regarding claim 14, Owens does not disclose where the elongated sensor has a tape coupled to tape support means extending along the length of the well for retaining the tape in place within the well between well inspections thereby eliminating lowering sensors into the well that may require subsequent decontamination procedures. However, Ehrenfried et al. disclose where the elongated sensor has a tape coupled to tape support means extending along the length of the well for retaining the tape in place within the well between well inspections thereby eliminating lowering sensors into the well that may require subsequent decontamination procedures (13). Therefore, it would have been obvious

to one of ordinary skill in the art at the time the invention was made to modify Owens to include where the elongated sensor has a tape coupled to tape support means extending along the length of the well for retaining the tape in place within the well between well inspections thereby eliminating lowering sensors into the well that may require subsequent decontamination procedures. By adding this feature the user would be able to measure the specific changes within tank or container accurately.

Regarding claim 15, Owens does not disclose where the elongated sensor has a tape coupled to tape support means extending along the length of the well for retaining the tape in place within the well between well inspections thereby eliminating lowering sensors into the well that may require subsequent decontamination procedures. However, Ehrenfried et al. disclose where the elongated sensor has a tape coupled to tape support means extending along the length of the well for retaining the tape in place within the well between well inspections thereby eliminating lowering sensors into the well that may require subsequent decontamination procedures (13). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Owens to include where the elongated sensor has a tape coupled to tape support means extending along the length of the well for retaining the tape in place within the well between well inspections thereby eliminating lowering sensors into the well that may require subsequent

decontamination procedures. By adding this feature the user would be able to measure the specific changes within tank or container accurately.

Regarding claim 16, Owens does not disclose where the conductive liquid sensing circuit includes a conductive liquid sensing means coupled to each resistor of the resistive network for effectively removing a resistor from the first network should a conductive liquid contact the conductive liquid sensing means. However, Ehrenfried et al. disclose where the conductive liquid sensing circuit includes a conductive liquid sensing means coupled to each resistor of the resistive network for effectively removing a resistor from the first network should a conductive liquid contact the conductive liquid sensing means (Column 7). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Owens to include where the conductive liquid sensing circuit includes a conductive liquid sensing means coupled to each resistor of the resistive network for effectively removing a resistor from the first network should a conductive liquid contact the conductive liquid sensing means. By adding this feature the apparatus would be able to precisely measure the level of the contents in the tank.

Regarding claim 17, Owens does not disclose where the conductive liquid sensing circuit includes a conductive liquid sensing means coupled to each resistor of the resistive network for effectively removing a resistor from the first network should a conductive liquid contact the conductive liquid sensing means. However, Ehrenfried et al.

disclose where the conductive liquid sensing circuit includes a conductive liquid sensing means coupled to each resistor of the resistive network for effectively removing a resistor from the first network should a conductive liquid contact the conductive liquid sensing means (Column 7). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Owens to include where the conductive liquid sensing circuit includes a conductive liquid sensing means coupled to each resistor of the resistive network for effectively removing a resistor from the first network should a conductive liquid contact the conductive liquid sensing means. By adding this feature the apparatus would be able to precisely measure the level of the contents in the tank.

Regarding claim 18, Owens does not disclose where the conductive liquid sensing circuit includes a conductive liquid sensing means coupled to each resistor of the resistive network for effectively removing a resistor from the first network should a conductive liquid contact the conductive liquid sensing means. However, Ehrenfried et al. disclose where the conductive liquid sensing circuit includes a conductive liquid sensing means coupled to each resistor of the resistive network for effectively removing a resistor from the first network should a conductive liquid contact the conductive liquid sensing means (Column 7). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Owens to include where the conductive liquid sensing circuit includes a conductive liquid sensing means coupled

to each resistor of the resistive network for effectively removing a resistor from the first network should a conductive liquid contact the conductive liquid sensing means. By adding this feature the apparatus would be able to precisely measure the level of the contents in the tank.

Regarding claim 19, Owens does not disclose where the conductive liquid sensing circuit includes a conductive liquid sensing means coupled to each resistor of the resistive network for effectively removing a resistor from the first network should a conductive liquid contact the conductive liquid sensing means. However, Ehrenfried et al. disclose where the conductive liquid sensing circuit includes a conductive liquid sensing means coupled to each resistor of the resistive network for effectively removing a resistor from the first network should a conductive liquid contact the conductive liquid sensing means (Column 7). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Owens to include where the conductive liquid sensing circuit includes a conductive liquid sensing means coupled to each resistor of the resistive network for effectively removing a resistor from the first network should a conductive liquid contact the conductive liquid sensing means. By adding this feature the apparatus would be able to precisely measure the level of the contents in the tank.

Regarding claim 20, Owens does not disclose where a conductive liquid sensing means is coupled to each resistor of the first resistive network for effectively removing a resistor from the first resistive network

should a conductive liquid contact the conductive liquid sensing means. However, Ehrenfried et al. disclose where the conductive liquid sensing circuit includes a conductive liquid sensing means coupled to each resistor of the resistive network for effectively removing a resistor from the first network should a conductive liquid contact the conductive liquid sensing means (Column 7). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Owens to include where the conductive liquid sensing circuit includes a conductive liquid sensing means coupled to each resistor of the resistive network for effectively removing a resistor from the first network should a conductive liquid contact the conductive liquid sensing means. By adding this feature the apparatus would be able to precisely measure the level of the contents in the tank.

Regarding claim 21, Owens discloses where the conductive liquid sensing circuit includes tiny contacts positioned within the tape (Figures 2,3).

6. Claims 30-33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

7. Applicant's arguments with respect to claims 1-21 have been considered but are moot in view of the new ground of rejection.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to André K. Jackson whose telephone number is (571) 272-2196. The examiner can normally be reached on Mon.-Thurs. 7AM-4PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A.J.

March 31, 2004

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